TECHNICAL MEMORANDUM

Date:	December 12, 2013	**Project No.:**	013-1646-013.500.01
To:	Will Ernst	**Company:**	The Boeing Company
From:	Denise Carscadden, PE		
cc:	Kent Angelos & Ted Norton (Golder)	**Email:**	dcarscadden@golder.com
RE:	**BUILDING 2-31 TRUCK LANE COMPLETION**		

1.0 INTRODUCTION

The Boeing Company (Boeing) received verbal approval from the US Environmental Protection Agency (EPA) on August 1, 2013 to remove five landscape islands and construct a new 30-foot truck lane west of Building 2-31 within the Industrial Risk Management Area (IRMA) at Plant 2 (Figures 1 and 2). The landscape areas were constructed as part of the 2011/2012 South Plant 2 redevelopment project and are subject to conditions of EPAs Risk Based Decision Approval (RBDA) associated with the use of crushed concrete as backfill at Plant 2.

The work was performed from August 5, 2013 to September 17, 2013 and included excavating topsoil, native soil, crushed imported fill, and crushed concrete from five landscape island areas; removing existing island concrete curbs, sawcutting the asphalt, placing base gravel, and laying asphalt for the new truck lane (Figures 1 and 2). The work also included removing sections of fencing in two locations and installing concrete-filled, steel bollards around two fire hydrants and one light pole.

2.0 EXCAVATION

Boeing performed excavation of the following five landscape islands west of Building 2-31 (Figure 2):

- Area 1 – South Landscape Area
- Area 2 – South Landscape Island
- Area 3 – Small Center Landscape Island
- Area 4 – North Center Landscape Island
- Area 5 – North Landscape Island

In all landscape areas, approximately 6 inches of topsoil were removed, leaving a couple of inches of residual topsoil over the underlying material. During topsoil removal, hand shovels were used to ensure that the excavation was above native soil/import gravel mixture and not in contact with crushed concrete. Groundwater was not encountered in the excavations, as the groundwater surface at Plant 2 is typically 10 to 12 feet bgs.

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Topsoil mixed with import gravel from Areas 1 and 2 and the top several inches topsoil from Areas 3, 4, and 5 contained clean topsoil (i.e., no crushed concrete). Approximately 20 cubic yards of topsoil was transported to Lloyds Enterprises, Inc. for recycling. The soil underlying the topsoil in Areas 3, 4, and 5 contained native soil, imported gravel fill, and some crushed concrete. Approximately 100 cubic yards of residual topsoil, native soil/imported fill, and crushed concrete was loaded into 16 tub skids for waste characterization sampling and landfill disposal at a subtitle D landfill in accordance with the RBDA.

Concrete curbs surrounding the landscape islands were extruded on top of the existing asphalt approximately 2 to 3 inches from the edge of the asphalt. The concrete curbs were not in direct contact with the native soil/crushed concrete. Concrete curbs removed from the landscape islands were transported to Renton Concrete Recycling.

Following soil excavation, the asphalt around the edges of the five landscape islands was sawcut to provide a clean surface for placing new asphalt pavement. The saw cut edges of the asphalt from the two southern planter areas (in contact with clean imported fill materials only) were loaded into a truck for transport to a recycler. Approximately 5 cubic yards of asphalt removed from the northern three areas (in contact with either crushed concrete or native soil) was placed on plastic sheeting at the southwestern corner of the parking lot. This material was covered with plastic and secured with sandbags prior to offsite disposal at a subtitle D landfill in accordance with the RBDA. The asphalt slurry collected during sawcutting was collected in a drum and transported to Building 2-120 (Hazardous Materials Shop). A crushed rock base course was placed, graded, and compacted prior to placing asphalt.

The existing parking stalls paint stripping was removed by hydro-blasting. The paint slurry was vacuumed using a vac-truck and transported offsite for disposal through Boeing Hazardous Materials Handling Group.

Five existing fence posts at the east end of the truck lane were removed by cutting the post flush with the existing concrete pavement (Figure 2). Along the south boundary of the south planter strip, five existing fence posts were excavated and removed.

Four steel bollards were installed at north central landscape island to protect a fire hydrant. At the north landscape island, four steel bollards were installed around a hydrant and four were installed around light pole. The asphalt around bollards was patched using floatable concrete grout. Soil cuttings from the auger consisted primarily of residual topsoil, native soil, and crushed concrete. This material was placed in a tub skid for waste characterization sampling and offsite landfill disposal at a subtitle D landfill in accordance with the RBDA.

3.0 WASTE DESIGNATION AND DISPOSAL

Crushed concrete fill containing polychlorinated biphenyls (PCBs) is regulated under the Toxic Substances Control Act (TSCA) RBDA outlined under EPA's Order requiring waste segregation and designation prior to disposal.

Two composite samples were collected on August 16, 2013 from the 16 tub skids. The samples were submitted to Boeing's Environmental Analysis Laboratory for PCBs and Toxicity Characteristic Leaching Procedure (TCLP) Resource Conservation and Recovery Act (RCRA) eight metals. The soil was designated nonhazardous (waste profile RXN0079) and transferred to a rolloff container. Approximately 100 cubic yards of topsoil, native soil, and crushed concrete mixture and approximately 5 cubic yards of asphalt were separately transported by rail to Columbia Ridge (Subtitle D) Landfill, Oregon in rolloff containers on September 10 and 17, respectively.

4.0 CONSTRUCTION AND SUPPORT ACTIVITIES

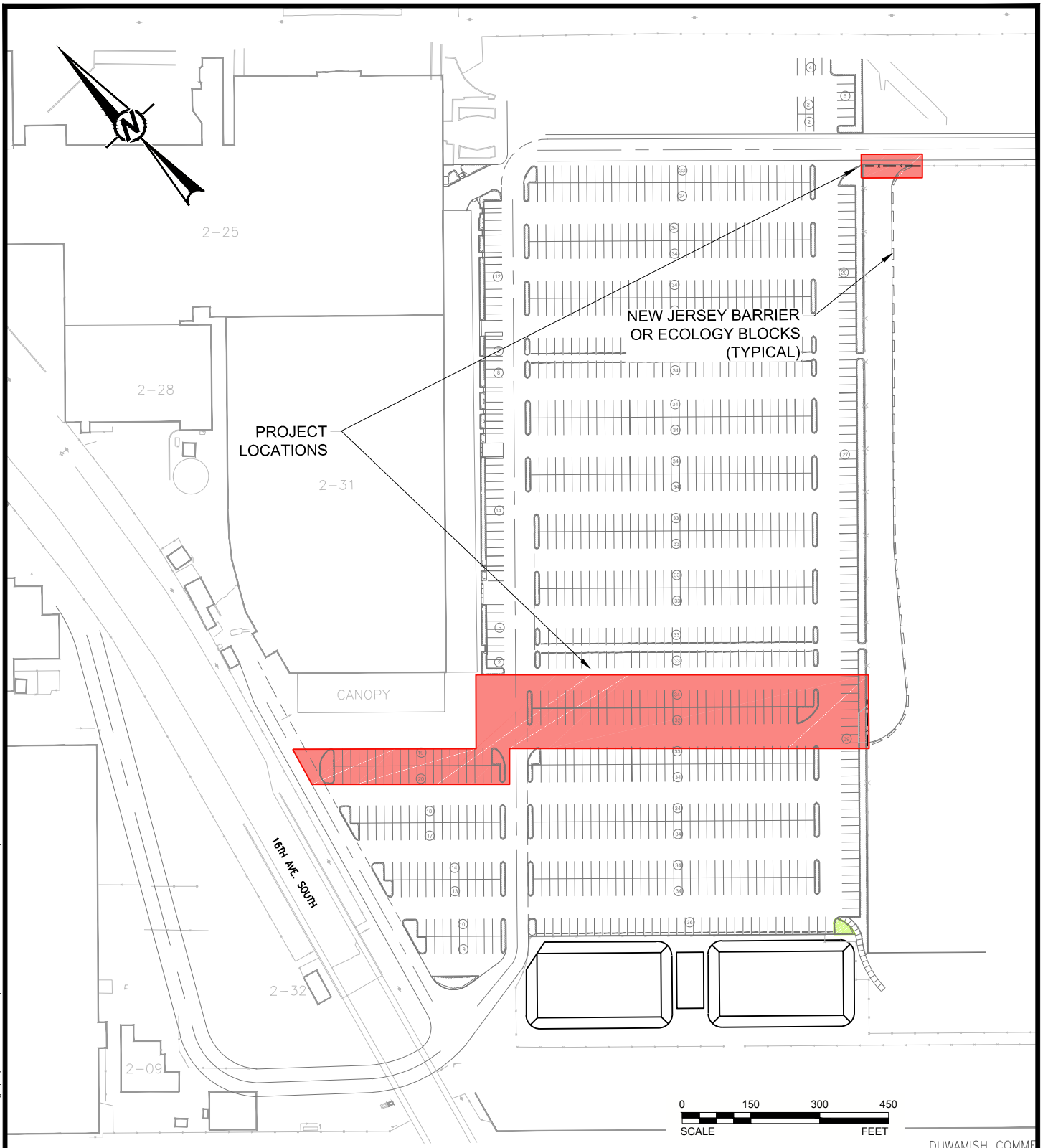
Construction support activities were conducted in accordance with Golder Associates Inc. (Golder's) August 2013 Plant 2 General Construction Health and Safety Plan (Golder 2013[1]), and Boeing's environmental, health, and safety requirements.

The support activities included visual monitoring and documentation in support of construction of the truck lane at Plant 2 including topsoil removal, segregation of excavated materials, material characterization, and disposal. Construction related sampling of soil was not performed. The excavated materials were segregated as they were removed and properly managed for characterization and disposition. Excavated material that included any crushed concrete was handled consistent with the TSCA RBDA requirements.

List of Figures

[1] Golder Associates Inc. 2013. Boeing Plant 2 Support Services. General Site Construction Health and Safety Environmental Plan. Prepared for the Boeing Company. August 13.

FIGURES



LEGEND

LANDSCAPE ISLAND AND FENCE REMOVAL AREAS

PROJECT

BOEING PLANT 2
SEATTLE, WASHINGTON

TITLE

VICINITY MAP
2-31 TRUCK LANE
LANDSCAPE ISLANDS AND FENCE REMOVALS

Golder Associates

PROJECT No.		0131646013.500	FILE No.	0131646013500-0002-HS-0001
DESIGN	DC	2013/10/04	SCALE	AS SHOWN
CADD	SES	2013/10/04	FIGURE	
CHECK	DC	2013/10/04		1
REVIEW	TN	2013/10/04		

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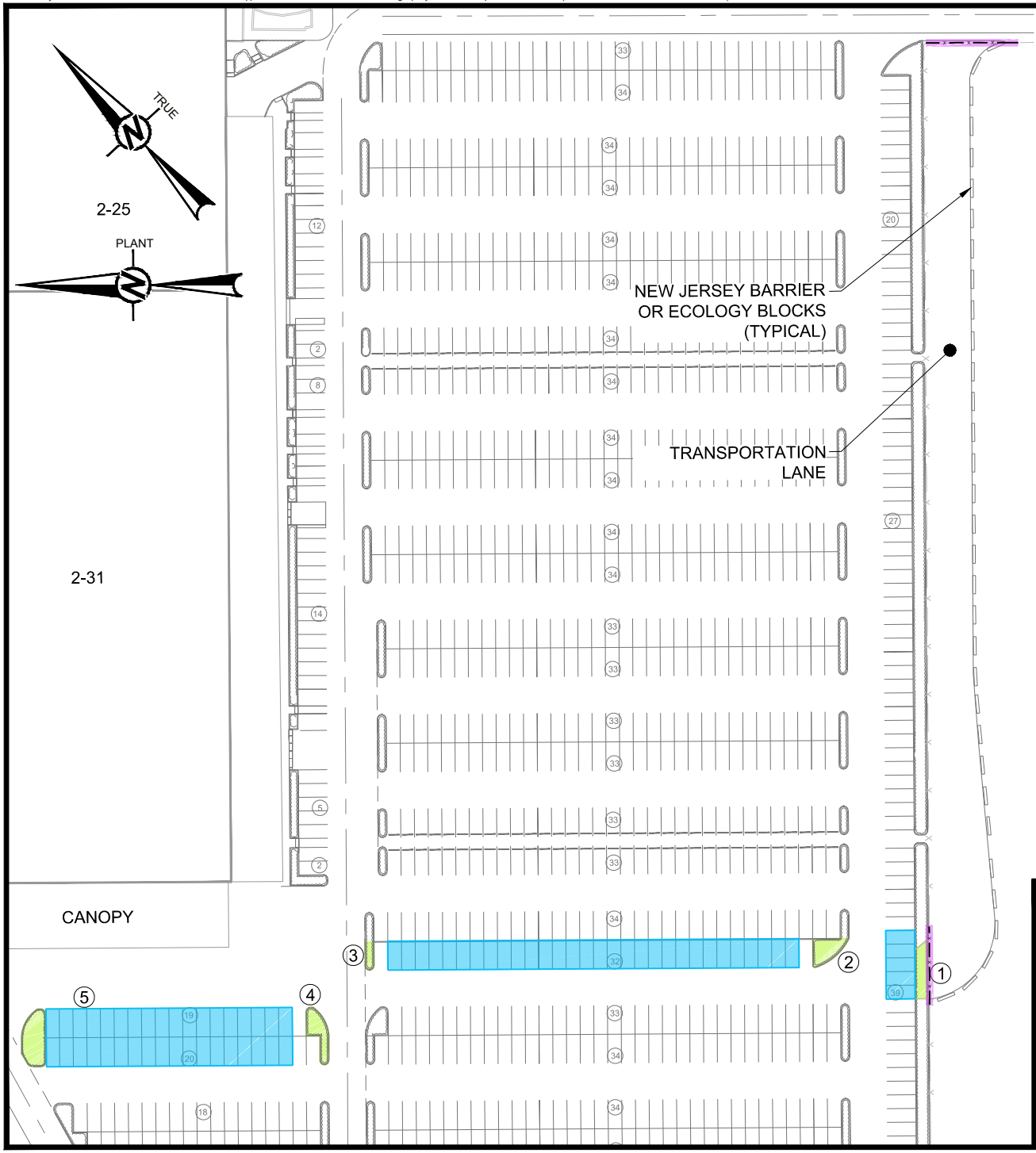

LEGEND

- ① LANDSCAPE ISLAND REMOVAL AREAS
- PARKING STALL PAINT STRIP REMOVAL AREAS
- FENCE LINE
- FENCE LINE REMOVAL AREAS

0 50 100 150
SCALE FEET

PROJECT

BOEING PLANT 2
SEATTLE, WASHINGTON

TITLE

2-31 TRUCK LANE LANDSCAPE ISLANDS AND FENCE REMOVAL

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PROJECT No. 0131646013.500.01			FILE No. 0131646013500-0001-HS-0001	
DESIGN	SM	2013-10-04	SCALE	AS SHOWN
CADD	SES	2013-10-04	FIGURE	
CHECK	TN	2013-10-04	2	
REVIEW	TN	2013-10-04		